



INVESTOR IN PEOPLE

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Patents Directorate

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Your Reference: GBP290069
Application No: GB0404698.3

25 August 2004

Dear Sirs

Patents Act 1977:
Combined Search and Examination Report under Sections 17 and 18(3)

Latest date for reply:

3 March 2006

I enclose two copies of my search and examination report and two copies of the citations.

By the above date you should either file amendments to meet the objections in the report or make observations on them. If you do not, the application may be refused.

Other search results

If you have applied to another patent office for a patent for this invention you will be receiving from them the results of their search. If you decide to proceed with the present application you are asked to provide me with a copy of any such official search report; or to email identifying details of the cited documents (including any category assigned in the report) to the email address above.

Cut-off date This request applies to search reports that you have received before the date when you send a response to our first examination report under section 18(3) or section 18(4); if you make no response to an initial section 18(4) report the cut-off date is two months after the date of that report. Tell us about a search report sooner rather than later if that would allow it to be considered during our first examination.

[†]Use of E-mail: Please note that e-mail should be used for correspondence only.



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Exceptions You do not have to supply details of a search report that (1) shows a nil response, or (2) has been published by WIPO or EPO, or (3) you have already supplied to us on a previous GB application.

Publication

I estimate that, provided you have met all the formal requirements, preparations for publication of your application will be completed soon after **26 July 2005**. At this time you will receive a letter confirming the exact date when the preparations for publication will be completed. This letter will also tell you the publication number and date of publication of your application.

Withdrawal/amendment

If you wish to withdraw your application before it is published you must do so before the preparations for publication are complete. **WARNING** – after preparations for publication are complete it will NOT be possible to withdraw your application from publication.

If you wish to file amended claims for inclusion with the published application you must do so before the preparations for publication are completed. If you write to the Office less than 3 weeks before 26 July 2005 please mark your letter prominently:

"URGENT - PUBLICATION IMMINENT".

Yours faithfully

Dr Laura Starrs
Examiner

Important information about combined search and examination

I also ask that you take note of the following points. These might have a bearing on the future stages of your application because the examination report has been sent to you before your application has been published.

- (a) You may file voluntary amendments before making a full response to my examination report. We will publish with your application any new or amended claims you file voluntarily or as a full response, provided that they are received before preparations for publication are completed. It would help us when you file amendments before publication if you could prominently indicate in a covering letter whether or not the amendments are intended as a full response to the examination report.
- (b) If you file a full response to the examination report before your application is published I will consider it as soon as possible. However, if this would disrupt the publication of your application, I would have to delay



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taking any action until the application had been published. This delay could be up to 3 months, depending upon when we receive your response.

- (c) There is another situation when there might be a delay between you filing a full response and the Patent Office responding to it. This would arise if you met all my objections but your application had not or had only recently been published. I could not report the outcome of my re-examination until I was satisfied that the search was complete for documents published before the priority date of your invention and that anybody interested in the application has had three months following publication of the application to make observations on the patentability of your invention.
- (d) Provided that the requirements of the Act have been met, I can send your application to grant as early as three months after publication. Before doing so I will bring the original search up to date and raise with you any further objection that might result from this top-up search. However, there is a possibility that at that time I may not have access to all the patent applications published after the priority date of your invention and of possible relevance to your application. If this is the case I would have to complete the search after grant and if necessary raise any new found novelty objection then.



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Patents Act 1977

Combined Search and Examination Report under Sections 17 & 18(3)

Novelty (section 1 (1)(a))

1. The invention as defined in claims 1 to 10 and 12 to 15 is not new because it has already been disclosed in the following documents:

D1 JP 2003260812 A (SEIKO)	see fig 1 relevant to claims 1-4, 10 and 13
D2 JP 2004058448 A (DENSO)	see figs 1 and 6, relevant to claims 1-4, 10 and 12-15
D3 US2002/0085187 A1 (FUJI)	see fig 2, relevant to claims 1, 2, 4-10 and 12-15

2. The above documents all describe OLED devices provided with microlenses. Each device comprises a planar light coupling body with a light emitting portion of the OLED and the microlens disposed on opposite faces of the light coupling body. The centre of curvature of the microlens is either on the surface of the light coupling layer (see D1) or within the light coupling layer (see D2 and D3). The thickness of the light coupling layer T and the radius of curvature of the microlens R as such that R/T falls within the range 0.2 to 0.8. Consequently claim 1 is not novel.

3. The above documents all disclose bottom emitter devices where the light coupling layer is a planar substrate a light emitting portion of the OLED and the microlens disposed on opposite faces. Consequently claim 2 is not novel.

4. D2 discloses a top emitter device where the light coupling layer is disposed over the light emitting portion 26 and a microlens is disposed on the opposing side. The device of D1 is also not clearly distinguished from claim 3 and hence claim 3 is not novel.

5. Claim 4 is not novel since all of the above documents disclose the microlens centred over the light emitting portion.

6. D3 discloses a device where the ratio R/T is less than one. Therefore, all the ranges for the value of x claimed in claims 5 to 9 are considered to be known. Consequently claims 5 to 9 are anticipated.

7. The microlenses disclosed in the above documents are plano-convex lenses. Therefore claim 10 is not novel.

8. The above documents disclose light coupling layers and microlenses with refractive indices in the ranges claimed in claims 12 and 13. Consequently claims 12 and 13 are not novel.



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[Examination Report contd.]

9. D2 and D3 disclose the use of glass and/or polymers such as polycarbonates as the materials for the light coupling layer and the microlenses. The refractive index of the disclosed materials fall within the ranges specified in claim 15. Consequently claims 14 and 15 are not novel.

Inventive step (section 1(1)(b))

10. Claim 11 is obvious since Fresnel lenses are well known.

Clarity (section 14(5)(b))

11. Claim 17 is unclear in defining the relationship between the thickness T and the pixel pitch P . According to claim 17 " $T = yP$ ", however, claim 16 defines the constant y such that $R = yP$. The claims are, therefore, inconsistent with claim 1 since they imply that $T=R$ which leads to a value of the constant x of 1 which is outside the range of values claimed in claim 1. This inconsistency also appears in the description between the fourth paragraph on page 5 and the third paragraph on page 6.

12. Please ensure that the claims and the description, in particular the statements of invention on page 4, are made fully consistent when making amendments to overcome the above objections.



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Application No: GB0404698.3

Examiner: Dr Laura Starrs

Claims searched: all

Date of search: 24 August 2004

Patents Act 1977: Search Report under Section 17

Documents considered to be relevant:

Category	Relevant to claims	Identity of document and passage or figure of particular relevance
X	1-15	JP2003260812 A (SEIKO) - see figure 1 and paragraphs 38-40
X	1-15	JP2004058448 A (DENSO) - see figures 1 and 6 and paragraphs 34 and 61
X	1, 2, 4-10	US2002/0085187 A1 (FUJI) - see figure 1 and paragraphs 55 and 56
A	--	JP2004127662 A (SONY) see figure 1

Categories:

X	Document indicating lack of novelty or inventive step	A	Document indicating technological background and/or state of the art.
Y	Document indicating lack of inventive step if combined with one or more other documents of same category.	P	Document published on or after the declared priority date but before the filing date of this invention.
&	Member of the same patent family	E	Patent document published on or after, but with priority date earlier than, the filing date of this application.

Field of Search:

Search of GB, EP, WO & US patent documents classified in the following areas of the UKC^W:

H1K

Worldwide search of patent documents classified in the following areas of the IPC⁰⁷

B41J; H01L; H05B

The following online and other databases have been used in the preparation of this search report

EPODOC, WPI, PAJ